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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,851	12/22/2003	Jean-Marie Tran	871.0118.U1(US)	9087
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EXAMINER				
WILLIAMS, LAWRENCE B				
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2611				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/743,851

**Applicant(s)**

TRAN, JEAN-MARIE

**Examiner**

LAWRENCE B. WILLIAMS

**Art Unit**

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 4-14, 16-23 and 25-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-7, 17-20, 26-29 and 33 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 8-14, 16, 21-23, 30-32 and 34-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 8-14, 16, 21-23, 30-32, 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art in view of Eran et al. (US Patent 6,862,326 B1).

(1) With regard to claim 1, Applicant's Admitted Prior Art teaches a method to receive a code division multiple access (CDMA) signal from a radio channel, comprising: inputting a CDMA signal received through the radio channel to a searcher; and processing the received signal in the searcher to obtain a multi-path profile of the radio channel (pg. 1, lines 11-18). Applicant's Admitted Prior Art does not teach where processing comprises at least partially removing an effect of at least one of a transmit filter or a receive filter on the multi-path profile, where at partially removing comprises passing the received CDMA signal through as filter selected to have a filter characteristic that approximates an inverted amplitude or power response of the at least one of the transmit filter or the receive filter.

However, Eran et al. teaches processing a received signal where processing comprises at least partially removing an effect of at least one of a transmit filter or a receive filter on the

multi-path profile (col. 2, line 65-col. 3, line 4) where at partially removing comprises passing the received CDMA signal through as filter (Fig. 4, element 60) selected to have a filter characteristic that approximates an inverted amplitude or power response of the at least one of the transmit filter or the receive filter (col. 12, lines 59-col. 13, line 4, col. 13, lines 51-60; Eran et al. discloses the whitening matched filter applying inverse filtering to the channel response  $(1/H_{\max}) \cdot H_{\max}$ , the channel impulse response factors involving the transmit filter and receive filter. Thus if Eran et al. applies an inverse filtering technique, the inverse filter would inherently include a characteristic that approximates an inverted amplitude or power response of one of the transmit or receive filter).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Eran et al. as a method for compensating for the coloration potentially added by the transmit and receive filters (col. 2, line 65-col. 3, line 4).

(2) With regard to claim 2, Applicant's Admitted Prior Art also teaches a method as in claim 1, further comprising outputting the multi-path profile to a controller for use in making demodulator finger assignments (pg. 1, lines 16-18).

(3) With regard to claim 8, Eran et al. discloses the invention constructed in discrete hardware components (col. 4, lines 46-54). Thus one skilled in the art would have been motivated to incorporate the hardware into the searcher of Applicant's Admitted Prior Art for determining the matched filter response and a white filter response of a white matched filter that has low computational complexity and involves a constant number of computations (col. 2, lines 49-52).

(4) Regarding claim 9, though the least partially removing performed by a processor that is external to a searcher is not disclosed, such a method would be a design choice since the effect would be the same, i.e., the removing of effects of the transmit/receive filter.

(5) With regard to claim 10, Applicant's Admitted Prior Art teaches in Fig. 2, an apparatus to receive a code division multiple access (CDMA) signal from a radio channel, comprising: a receiver front end (106) for receiving a CDMA signal from the radio channel; said receiver front end comprising at least one receiver filter (106A-B) and outputting a digital representation of a radio channel multi-path profile to a control function (pg. 1, lines 16-18).

However, Applicant's Admitted Prior Art does not teach a deconvolution searcher block having an input coupled to an output of the receiver front end for inputting a received signal and an output for outputting a digital representation of a radio channel multi-path profile to a control function, said deconvolution searcher block comprising a unit for processing the received signal to at least partially remove an effect of at least said receiver filter on the multi-path profile.

However, Eran et al. teaches in a deconvolution block (whitening matched filter of Fig. 1, element 32 contains deconvolution block, 70 of Fig. 4) having an input coupled to an output of a receiver front end (28) for inputting a received signal and an output for outputting, said deconvolution block comprising a unit for processing the received signal to at least partially remove an effect of at least said receiver filter on the multipath profile (col. 2, line 65-col. 3, line 4), the unit comprising a filter having a filter characteristic that approximates an inverted amplitude response of at least said receiver (col. 12, lines 59-col. 13, line 4, col. 13, lines 51-60; Eran et al. discloses the whitening matched filter applying inverse filtering to the channel response ( $1/H_{\max}$ ).  $H_{\max}$ , the channel impulse response factors involving the transmit filter and

receive filter. Thus if Eran et al. applies an inverse filtering technique, the inverse filter would inherently include a characteristic that approximates an inverted amplitude or power response of receive filter).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Eran et al. as a method for compensating for the coloration potentially added by the receive filter (col. 2, line 65-col. 3, line 4).

(6) With regard to claim 11, Eran et al. also discloses where said unit for processing the received signal also at least partially removes an effect of a transmitter filter on the multi-path profile (col. 2, line 65-col. 3, line 4).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Eran et al. as a method for compensating for the coloration potentially added by the receive filter (col. 2, line 65-col. 3, line 4).

(7) With regard to claim 12, Applicant's admitted prior art also discloses where said receiver is located at a mobile station (pg. 1, line 16), and where said transmitter is located at a base station (pg. 2, line 3).

(8) With regard to claim 13, though Applicant's Admitted Prior Art discloses the transmitter and receiver in opposite locations, one skilled in the art would inherently apply the prior art to both base and mobile since both comprises transceivers and thus realize the same problem.

(9) With regard to claim 14, Applicant's Admitted Prior Art also teaches where said control function uses the multi-path profile when making demodulator finger assignments (pg. 1, lines 16-18).

(11) With regard to claim 21, claim 21 discloses limitations similar to those disclosed in claim 10. Therefore a similar rejection applies.

(12) With regard to claim 22, claim 22 discloses limitations similar to those disclosed in claim 11. Therefore a similar rejection applies.

(13) With regard to claim 23, claim 23 discloses limitations similar to those disclosed in claim 14. Therefore a similar rejection applies.

(14) Regarding claim 25, claim 25 discloses limitations similar to those disclosed in claim 16, therefore a similar rejection applies.

(15) With regard to claim 30, Eran et al. discloses the invention constructed in discrete hardware components (col. 4, lines 46-54). Thus one skilled in the art would have been motivated to incorporate the hardware into the searcher of Applicant's Admitted Prior Art for determining the matched filter response and a white filter response of a white matched filter that has low computational complexity and involves a constant number of computations (col. 2, lines 49-52).

(16) With regard to claim 31, Erin et al. also discloses where said unit is implemented in control function software (col. 4, lines 46-53).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Eran et al. as to enhance reliability, durability and allow ease of design changes.

(17) With regard to claim 32, Applicant's Admitted Prior art discloses in a mobile station, a method to reduce an amount of data provided to a finger assignment algorithm, comprising: inputting a CDMA signal received through a radio channel to a searcher; and processing the received signal in the searcher to generate output data for the finger assignment algorithm that

represents a multi-path profile of the radio channel, where processing comprises passing the received CDMA signal through a filter (pg(s) 1-2, background of the invention).

Applicant's Admitted Prior art is silent as to the subject of a filter selected to have a filter characteristic that approximates an inverted response of at least one of a base station transmit filter or at least one mobile station receive filter to reduce an occurrence of multi-path side lobes in the output data (col. 2, lines 1-9).

However, Eran et al. discloses where processing comprises passing the received CDMA signal through a filter (Fig. 4) selected to have a filter characteristic that approximates an inverted response of at least one of a base station transmit filter or at least one mobile station receive filter (col. 12, lines 59-col. 13, line 4, col. 13, lines 51-60; Eran et al. discloses the whitening matched filter applying inverse filtering to the channel response ( $1/H_{\max}$ ).  $H_{\max}$ , the channel impulse response factors involving the transmit filter and receive filter. Thus if Eran et al. applies an inverse filtering technique, the inverse filter would inherently include a characteristic that approximates an inverted amplitude or power response of receive filter) to reduce an occurrence of multi-path side lobes in the output data (col. 2, line 66 to col. 3, line 4; Eran et al. discloses the whitening matched filter operative to compensate for coloration added by channel distortion including multipath propagation and acting to whiten (decorrelate) the colored noise in the signal. this would act to suppress sidelobes (noise).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Eran et al. as a method for compensating for the coloration potentially added by channel distortion and multipath propagation (col. 2, line 65-col. 3, line 4).



(18) With regard to claim 34, claim 34 discloses limitations similar to those disclosed in claim 21. Therefore a similar rejection applies.

(19) With regard to claim 35, claim 35 discloses limitations similar to those disclosed in claim 11. Therefore a similar rejection applies.

(20) With regard to claim 36, Eran et al. discloses circuitry for removing effects of a transmit/receive filter (col. 2, line 62-col. 3, line 4) being implemented in an integrated circuit (col. 4, lines 46-53).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Eran et al. as a method for compensating for the coloration potentially added by channel distortion and multipath propagation (col. 2, line 65-col. 3, line 4).

(21) Regarding claim 37, Eran et al. also discloses where the filter has a filter characteristic that approximates an inverted response of said receiver filter and said transmitter filter (col. 12, lines 59-col. 13, line 4, col. 13, lines 51-60; Eran et al. discloses the whitening matched filter applying inverse filtering to the channel response ( $1/H_{\max}$ ).  $H_{\max}$ , the channel impulse response factors involving the transmit filter and receive filter. Thus if Eran et al. applies an inverse filtering technique, the inverse filter would inherently include a characteristic that approximates an inverted amplitude or power response of receiver filter and said transmitter filter).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Eran et al. as a method for compensating for the coloration potentially added by the transmitter and receiver filter (col. 2, line 65-col. 3, line 4).

(22) Regarding claim 38, Eran et al. also discloses method as in claim 1, where the filter is selected to have a filter characteristic that approximates an inverted amplitude or power response of the transmit filter and the receive filter (col. 12, lines 59-col. 13, line 4, col. 13, lines 51-60; Eran et al. discloses the whitening matched filter applying inverse filtering to the channel response ( $1/H_{\max}$ ).  $H_{\max}$ , the channel impulse response factors involving the transmit filter and receive filter. Thus if Eran et al. applies an inverse filtering technique, the inverse filter would inherently include a characteristic that approximates an inverted amplitude or power response of the transmit and receive filters).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Eran et al. as a method for compensating for the coloration potentially added by the transmit and receive filter (col. 2, line 65-col. 3, line 4).

#### ***Allowable Subject Matter***

3. Claims 4-7, 17-20, 26-29, 33 are allowed.

#### ***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams

lbw  
July 24, 2008

/Lawrence B Williams/

Primary Examiner, Art Unit 2611